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8930-68  
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NRO REVIEW COMPLETED

4 April 1968

USAF REVIEW COMPLETED

MEMORANDUM FOR: Director of Operations, OSA  
ATTENTION : Special Action Staff, OSA  
SUBJECT : Quarterly Program Progress Report  
Deputy for Research and Development  
(January, February, March 1968)

Attached is the Deputy for Research and Development,  
OSA Quarterly Program Progress Report for First Quarter  
Calendar 1968.



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Deputy for  
Research and Development  
Special Activities

Attachment:  
Quarterly Program  
Progress Report

A(P)D/R&D/OSA  /4 Apr 68

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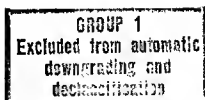
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- 2 - D/R&D/OSA
- 3 - D/R&D/OSA(Chrono)
- 4 - RB/OSA

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OXCART/PINWHEEL

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[ ] 8907-68  
Copy 2 of 5

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3 April 1968

MEMORANDUM FOR: Deputy for Operations, OSA

ATTENTION: Chief, Special Action Staff, Operations, OSA

SUBJECT: OXCART Monthly Operational Summary  
and Status Report for Period 1-31 March 1968

1. Overflight Summary (PINWHEEL):

a. One A-12 operational mission was flown during the month of March. The mission was launched from and recovered at Kadena Air Base, Okinawa.

(1) [ ] against targets of interest in the DMZ area, North Vietnam and the Cambodian/Laotian border of South Vietnam. Total flight time was 4:01.

[ ] Portions of Laos, Cambodia and the South Vietnamese-Cambodian border were covered on cloud-free photography. Nine bonus targets were obtained in Laos and four bonus targets were obtained in Cambodia. No useable photography of North Vietnam was obtained due to cloud cover. This mission was designed and flown primarily to obtain coverage of the high interest area around the DMZ and Khe Sanh.

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2. SAC/SR-71 Take Over of North Vietnam Coverage:

Three SAC/SR-71 aircraft deployed to Kadena Air Base, Okinawa, on 9, 11 and 13 March 1968. Primary responsibility for surveillance of North Vietnam was assumed by the SR-71's effective 0001Z/15 March 1968. Per DNRO decision, OXCART Deployed Task Force will remain at Kadena a minimum of thirty days and redeploy upon direction by higher authority. While co-located at Kadena with the SR-71 Task Force, DTFC will maintain capability to generate/execute operational mission if directed to do so.

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4. Project Pilot Inventory:

Six Project pilots are currently operationally ready. Two pilots are at Kadena Air Base [ ]

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5. A-12 Aircraft:

a. Following five aircraft [ ]

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(1) Aircraft 121 (flight test); Aircraft 128, 132 and 124 (trainer).

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8907-68  
Page 3

25X1A

(2) Aircraft 130 was placed in storage  on  
26 February 1968.

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b. Aircraft 127, 129 and 131 are at Kadena Air Base, Okinawa.



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Chief, OXCART Division, Operations, OSA

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OPERATIONAL SUMMARY AND STATUS

(1 January 1968 - 31 March 1968)

I. Overflight Summary

Three Agency U-2 overflight missions were flown during the third quarter of FY 68. Three other missions were alerted but two were cancelled due to weather and the other was recalled after take off (prior to entry into denied territory) due to deteriorating weather in the target area.

25X1D 1. [REDACTED] 25X1D  
[REDACTED] This mission covered the Central China Coast with the "H" camera. The aircraft did not overfly the China mainland. [REDACTED] 25X1D  
25X1D [REDACTED] No aircraft missiles or contrails were sighted by the pilot. [REDACTED] 25X1D

25X1D 2. [REDACTED] 25X1D  
[REDACTED] This mission covered South China along the Sino-DRV border, with the Delta Camera. This was the first overflight of the China land mass since 8 September 1967. [REDACTED] 25X1D  
[REDACTED] 25X1D

25X1D [REDACTED] One MIG-21 was sighted by the pilot. Over all photo analysis was considered good with 60% cloud cover.

25X1D 3. [REDACTED] 25X1D  
[REDACTED] 25X1D  
[REDACTED] The observed weather was good over the target area and 80% of photo coverage was obtained.

IDEALIST  
TOP SECRET

TOP SECRET  
IDEALIST

Page 2

25X1D

II. General

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2. [REDACTED]

Three flights were made in January for the purpose of obtaining photo coverage of designated tactical and strategic U.S. targets for the U.S. Navy. Excellent results were obtained.

3. SWAP SHOP:

SWAP SHOP IX, ferry of Article 385 from [REDACTED] on 23 January, to [REDACTED] was completed on 30 January. Due to a fluctuating compass card and then a loss of the DC generator, a three day delay was encountered at Hickam.

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4. U-2R:

[REDACTED] completed two orientation flights and [REDACTED] completed one in the U-2R during January. No further flights have been made since due to unsolved tail pipe vibrations.

5. JP-5 Fuel Tests:

All flights on Article 349 during January and February were flown using JP-5 fuel in continuation

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TOP SECRET

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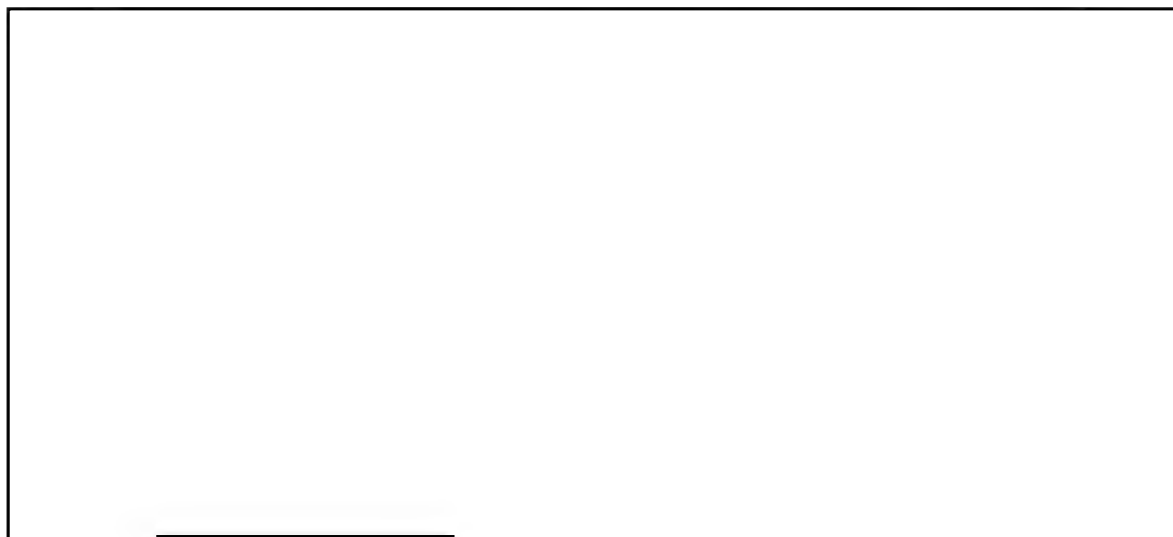
Page 3

of the test utilizing JP-5 fuel for the U-2 aircraft. As a result of an engine change on Article 349 this test was terminated on 28 February.

6. RED DOT:

Five RED DOT missions were flown this quarter. These are film evaluation missions.

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9. [REDACTED]

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Carrier requalifications were scheduled during February. Four [REDACTED] pilots participated in multiple MLPs at Edwards and subsequently 10 sorties were flown on 27 February utilizing the aircraft carrier USS Constellation, off the Pacific coast.

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10. [REDACTED] has completed mission number 11 of the initial flight training course.



25X1D

IDEALIST  
TOP SECRET

TOP SECRET  
IDEALIST

Page 4



25X1D

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13. Article 383 underwent major wing modification starting 14 February. The aircraft modification was completed on 13 March. This completes all wing modifications on Agency aircraft.

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III. Pilots and Aircraft:

Aircraft

Pilots



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Attachment to  
[ ] 8930-68

25X1A

QUARTERLY PROGRAM PROGRESS REPORT

Deputy for Research and Development

January, February, March 1968

I. OX CART

A. Development Summary

1. Airframe - An A-12 Flight Handbook performance meeting, convened by Operations, was attended at LAC, Burbank to review the latest revisions. The revised data included non-standard day performance, high-altitude turn technique and a proposed revised format for mission profiles.
2. Propulsion - Aircraft 127 experienced an engine compressor stall problem at 20,000 feet during a rapid descent on 27 February at Kadena. The stall problem could not be cleared and the aircraft landed with the left engine in a stalled condition. The engine involved (S/N 229) was immediately returned [ ] for flight investigation in Aircraft 121. The objectives of these flight tests included duplication of the problem experienced in Aircraft 127 and investigation of possible techniques to be used by the pilot for clearing such stalls if the problem is encountered in flight. Four flights in Aircraft 121 failed to duplicate the problem and another engine (S/N 221) which had exhibited similar stall characteristics has replaced S/N 229 in Aircraft 121 in another effort to duplicate and investigate the problem in flight.
3. Life Support - During this period no major life support development activities occurred. Modification kits for each pilot's pressure suit were delivered during this period which will provide various flotation improvements developed in the past. Included in the modifications are pressure relief valves for protection against

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TOP SECRET

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25X1A

Attachment to  
[ ] 8930-68  
Page 2

25X1A

inadvertent inflation at altitude, provisions for using the LAC-provided, water activated, automatic inflator, drain provisions for coverall legs and pockets, and relocation of the inflator for easy access of lanyard with either hand. Flame resistant cloth boots (NOMEX H-T) were delivered for each pilot's pressure suit for use with the canvas tropical boots being used on BLACK SHIELD flights. New ejection seat headrests with improved man/seat separators were installed by service bulletin during this period. This development was conducted during the preceeding calendar year by LAC. New life raft delivery was accomplished during this period after a long delay due to inability of the contractor to procure adequate materials. A one day familiarization visit was made to the Kadena facility by [ ] during this period.

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4. Sensors - During this quarterly period a total of 41 camera missions were flown.
- a. Type I - Twenty-eight (28) camera flights were made. Six (6) of these were operational missions and all were successful. There were no failures during any of the twenty-two (22) non-operational missions.
  - b. Type IV - Thirteen (13) missions were flown during this quarter. There was one failure. SN-3 malfunctioned twenty seconds after turn on. Inspection revealed gears in planetary drive motor froze due to defective seal which caused loss of lubrication.
  - c. Final missions for low sun tests were completed late in March. The data is now at Perkin Elmer for analysis. Altitude calibration tests utilizing Type IV were completed. Tests using Type I are being initiated.
  - d. New Type I exposure tables were committed to operational use.
  - e. A study by [ ] was completed and received by SSD/R&D/OSA. The data is currently being utilized.

25X1A  
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25X1A

Attachment to  
[ ] 8930-68  
Page 3

25X1A

5. AIRCRAFT FLIGHT TEST AND OPERATIONAL TRAINING SUMMARY

<u>AIRCRAFT</u>	<u>TOTAL FLIGHTS</u>	<u>TOTAL HOURS</u>	<u>M 3.0 FLTS</u>	<u>M 3.0 HRS</u>
121	319	414:48	136	81:20
122	162	177:12	57	14:27
123	78	136:10	-	-
124	598	1051:16	-	-
125	203	334:50	54	30:32
126	104	169:16	13	11:56
127	250	476:05	122	98:40
128	227	442:00	131	91:52
129	261	395:19	166	88:07
130	206	381:18	106	79:08
131	168	318:42	104	71:52
132	185	348:10	91	67:58
133	<u>9</u>	<u>8:17</u>	<u>-</u>	<u>-</u>
	2770	4653:23	980	635:52

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Attachment to  
[ ] 8930-68  
Page 4

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## II. IDEALIST

### A. U-2R Development Summary

1. Airframe - The second U-2R development status and technical meeting was held at LAC, Burbank on 1 February. Design changes in the hydraulic system and in the emergency brake system were reviewed. Instrumented flight data indicated excellent agreement between predicted and actual maximum power range factors and altitudes.
2. Propulsion - The flight test program for the U-2R aircraft has been delayed by problems encountered with the ejector type exhaust nozzle which involves serious unaxisymmetric thrust components on take-off, and high noise levels during ground running. The problem appears to be caused by flow separation in the diverging portion of the ejector, and attachment of the primary (tailpipe) flow on the ejector wall. Both the unaxisymmetric thrust and noise problems appear to be affected by very slight variations in tailpipe/ejector geometry and the amount and distribution of secondary airflow in the ejector. A number of schemes have been tested to date in an attempt to solve the problem. These have included cut and try modifications as well as efforts to remedy the problems through some understanding of the aerodynamics involved.
3. Life Support
  - a. S-1010 PPA: Three project pilots and the project test pilot received S-1010 Pilot Protective Assembly fittings and altitude chamber indoctrinations from [ ] during this period. The fittings were very successful, and the pilot acceptance and evaluation of the new equipment has been very satisfactory. The production of S-1010 PPA's has proceeded smoothly and no major problems have been encountered.

25X1A

TOP SECRET

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25X1A

TOP SECRET

Attachment to  
[ ] 8930-68  
Page 5

25X1A

- b. Support Equipment: AGE and test equipment for the S-1010 PPA and related U-2R life support equipment for Detachment G's FAKs and for Detachment H is in production and delivery has started on some items. No delays in outfitting either the FAKs or Detachment H are expected.
  - c. Visit to Detachment H: [ ] visited Detachment H for three days during January to assist in obtaining [ ] for the S-1010 PPA and to discuss U-2R life support equipment and AGE requirements with Detachment personnel. The status of U-2C support at Detachment H was also reviewed and found to be very satisfactory.
4. U-2R Delivery Schedule - Aircraft Nos. 3 and 4 were delivered to Edwards Air Force Base during the period. Aircraft No. 3 was delivered on 12 January and performed its first flight on 17 February 1968. Aircraft No. 4 was delivered on 13 February and flew for the first time on 29 March 1968. Acceptance of the aircraft by the Detachment has been delayed pending resolution of the propulsion system ejector problem.
  5. U-2R Flight Test Summary (thru 31 March 1968)

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<u>AIRCRAFT</u>	<u>TOTAL FLIGHTS</u>	<u>TOTAL HOURS</u>
1	50	161:37
2	18	57:13
3	6	12:18
4	2	1:11
	<u>76</u>	<u>232:19</u>

6. U-2R Milestones

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- a. Maximum Altitude
- b. Maximum Duration
- c. Maximum Take-off  
Gross Weight



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Attachment to  
[ ] 8930-68  
Page 6

25X1A

B. U-2C Program Life Support

1. Q-445 Seat Kit - An accidental disconnect of the pilot's oxygen leads from his seat kit during taxi-out occurred in January and has led to major meetings between ASD/R&D (Life Support), Detachment G personnel and Seat Kit contractors (LAC [ ])

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[ ] The immediate fix required was a one time inspection and updating of all Q-445 seat kits and a tightening of IRAN procedures and Quality Control inspections by the contractors involved. This was accomplished on all kits immediately after the incident and the subsequent discovery of the basic problem by Detachment G personnel. Because of the incident, the ECP for an improved Q-445 seat kit previously requested from LAC has been delayed. Agreements were reached during this period regarding the improvements required for improved safety, reliability, and protection. The new ECP is expected to be received shortly.

2. Partial Pressure Suit Modifications - If the Q-445 seat kit is modified to provide redundancy of oxygen supply (i.e., separate ship supply and emergency supply hoses), the P.P.S. will require additional oxygen hose attachments and check valves. An engineering study was initiated during this period to determine the exact requirements for such P.P.S. modifications.

3. Flame Resistent (NOMEX H-T) Coveralls - NOMEX coveralls for all IDEALIST pilots were delivered during this period.

4. Training - [ ] initiated training of Detachment G Personal Equipment technicians and technical representatives in the operation of the one man altitude chamber installed in the Freuhauf maintenance van during this period. [ ] received partial pressure suit indoctrination from [ ] in this chamber during this reporting period.

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Attachment to  
[redacted] 8930-68  
Page 7

25X1A

### III. GENERAL R&D

#### A. Induced Drag Reduction Program

The wind tunnel test program for the potential induced drag reduction concept is proceeding on schedule. Partial quantitative data were obtained using a single diffuser model [redacted]

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[redacted] wind tunnel. This data showed that significant forces are generated on the wing surface by the diffuser. During this period arrangements were completed to shift the quantitative part of the test program to the four-foot wind tunnel at the U.S. Naval Postgraduate School at Monterey, California. The tunnel has a 200 mph speed capability and a three component force balance. The tunnel is similar to the now dismantled tunnel at Caltech initially proposed for this program.

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#### C. Haze Attenuation Study

A small [redacted] six-month study was initiated with [redacted] to define the degree of improvement in aerial photography attainable by means of automatic polarization control. The effort was started in early February. No significant results are available, or expected at this time.

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Attachment to  
[redacted] 8930-68  
Page 8

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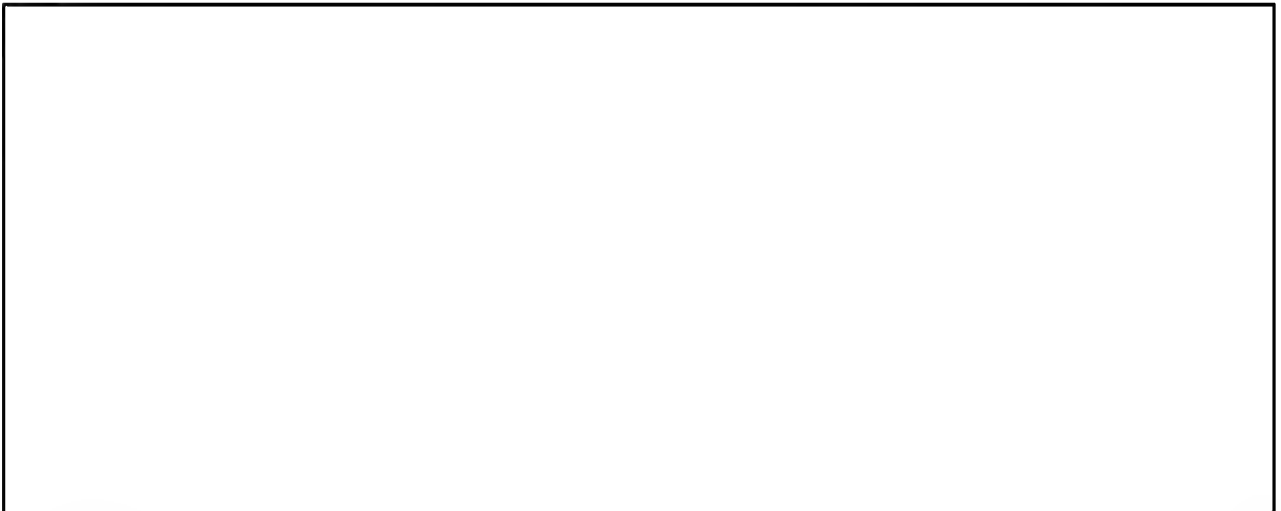


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F. Balloons

Contractual relations with [redacted] were terminated on 15 January 1968. The program was generally unsuccessful. It is not expected to further pursue balloon vehicles from this office.

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IV. MISCELLANEOUS

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Attachment to  
[ ] 8930-68  
Page 9

25X1A

B. Life Support

1. Conference at Lovelace Clinic, Albuquerque, New Mexico - [ ] attended and participated in a conference on Special Project Aeromedical and Life Support Activities which B/Gen Don Flickinger conducted. Participants included Lovelace Clinic personnel, U.S.A.F. Surgeon General Maj/Gen Kenneth Pletcher, and Aeromedical/Life Support Personnel [ ] Detachment G, U.S.A.F. Surgeon General's Office, and Beale AFB. [ ] reviewed OSA's life support requirements, equipment, and developmental efforts.

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C. General

1. The semi-annual OX CART A-12 Aircraft Experience Data and Systems Reliability publication was updated through 31 December 1967.
2. D/R&D personnel presented 16 hours of instruction during the OSA portion of the DD/S&T Career Development Course.

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